

Serial No. 10/809,780
Amdt. dated December 27, 2007
Reply to Office Action of August 29, 2007

Docket No. LT-0054

Listing of Claims

1. (Currently Amended) A method for adjusting an output level of audio data to be reproduced, comprising:
 - searching a recording medium for an audio file requested to be played, said recording medium storing a plurality of audio files;
 - temporarily storing audio data to be reproduced of the searched audio file and detecting an output level of the temporarily stored audio data; and
 - adjusting a gain of an audio output amplifier on the basis of the detected output level to output said adjusted audio data to be reproduced, wherein the temporarily stored audio data includes scale factors of sub-bands of audio frames of the audio file, the scale factors used to obtain the output level.
2. (Currently Amended) The method of claim 1, wherein the said recording medium is adapted to store audio files of various types.
3. (Currently Amended) The method of claim 2, wherein the said audio data to be reproduced is data into which the said searched audio file is converted by an audio codec corresponding thereto, and wherein the said recording medium is adapted to store at least one of an MP3 audio file, MPEG2 audio file and AC3 audio file.

4. (Currently Amended) The method of claim 1, wherein the said detected output level is a peak level or average level of the said temporarily stored audio data.

5. (Currently Amended) The method of claim 4, wherein said detected output level is determined by sampling a reduced subset of the temporarily stored audio data.

6. (Currently Amended) The method of claim 1, wherein the said temporarily storing comprises:

reading the said searched audio file from the said recording medium and converting it into the said audio data to be reproduced;

temporarily storing audio data of an amount corresponding to a predetermined period of time or a predetermined capacity, among the converted audio data, under the condition that the said converted audio data is not amplified and outputted; and

detecting the said output level of the temporarily stored audio data.

7. (Currently Amended) The method of claim 6, wherein the said adjusting comprises:

comparing the said detected output level with a predetermined reference level;

increasing the gain of the said audio output amplifier when the said detected output level is determined to be lower than the said reference level as a result of the comparison

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and reducing the gain when the said detected output level is determined to be higher than the said reference level; and

amplifying the said audio data to be reproduced, at the said adjusted gain, to output the said adjusted audio data at the said reference level.

8. (Currently Amended) The method of claim 1, wherein the said adjusting comprises:

comparing the said detected output level with a predetermined reference level;
increasing the gain of said audio output amplifier when the said detected output level is determined to be lower than the said reference level as a result of the comparison and reducing the gain when the said detected output level is determined to be higher than the said reference level; and

amplifying the said audio data to be reproduced, at the said adjusted gain, to output the said adjusted audio data at the said reference level.

9. (Currently Amended) The method of claim 1, wherein the said detecting and adjusting are performed on an audio file basis.

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10. (Currently Amended) ~~A~~ An article including a machine-readable storage medium containing instructions for adjusting an output level of audio data to be reproduced, said instructions, when executed in a digital audio system, causing the system to:

search a recording medium for an audio file requested to be played, the said recording medium storing audio files of various types;

temporarily store audio data to be reproduced of the searched audio file and detect an output level of the temporarily stored audio data; and

adjust a gain of an audio output amplifier on the basis of the detected output level to output the said audio data to be reproduced at a prescribed level, wherein the temporarily stored audio data includes scale factors of sub-bands of audio frames of the audio file, the scale factors used to obtain the output level.

11. (Currently Amended) The article of claim 10, wherein the said recording medium is adapted to store at least one of an MP3 audio file, MPEG2 audio file and AC3 audio file, and wherein the said audio data to be reproduced is data into which the said searched audio file is converted by an audio codec corresponding thereto.

12. (Currently Amended) The article of claim 10, wherein the said detected output level is a peak level or average level of the said temporarily stored audio data.

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13. (Currently Amended) The article of claim 12, wherein the said peak level or the said average level is determined by sampling a reduced subset of the temporarily stored audio data.

14. (Currently Amended) The article of claim 10, wherein the storage medium contains instructions for causing the system to:

read the said searched audio file from the said recording medium and convert it into the said audio data to be reproduced;

temporarily store audio data of an amount corresponding to a predetermined period of time or a predetermined capacity, among the converted audio data, under the condition that the said converted audio data is not amplified and outputted; and

detect the output level of the temporarily stored audio data.

15. (Currently Amended) The article of claim 10, wherein the storage medium contains instructions for causing the system to:

compare the said detected output level with a predetermined reference level;

increase the gain of the said audio output amplifier when the said detected output level is determined to be lower than the said reference level as a result of the comparison and reduce the gain when the said detected output level is determined to be higher than the said reference level;

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first amplify the said audio data to be reproduced, at the said adjusted gain, to output it at the said reference level; and

second amplify the first amplified audio data to be reproduced according to a user selected output level of the audio file to be played.

16. (Currently Amended) A digital audio system, comprising:

a reading device configured to read means for reading an audio file requested to be played from a recording medium, the said recording medium storing audio files of various types;

a converter configured to convert conversion means for converting the read audio file into audio data to be reproduced;

a storage device configured to temporarily store the storage means for temporarily storing said audio data to be reproduced;

a detector configured to detect detection means for detecting an output level of the temporarily stored audio data;

an audio amplifier configured to amplify and output the means for amplifying and outputting said audio data to be reproduced; and

a controller configured to control the reading device control means for controlling said read means to search the said recording medium for the said audio file requested to be played and read the searched audio file from said recording medium, coupled to said storage

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device means and detector detection means, and for adjusting a gain of the said audio amplifier means on the basis of the said detected output level, wherein the temporarily stored audio data includes scale factors of sub-bands of audio frames of the audio file, the scale factors used to obtain the output level.

17. (Currently Amended) The system of claim 16, wherein the digital audio system is one of a portable terminal, a portable computer, and a personal computer having a playback function for the said audio files, wherein the said recording medium is adapted to store at least one of an MP3 audio file, MPEG2 audio file and AC3 audio file.

18. (Currently Amended) The system of claim 16, wherein the storage device said storage means is adapted to temporarily store audio data of an amount corresponding to a predetermined period of time or a predetermined capacity, among the said converted audio data, under the condition that the said converted audio data is not amplified and outputted by the said audio amplifier means.

19. (Currently Amended) The system of claim 16, wherein the detector said detection means is adapted to detect a peak level or average level of said temporarily stored audio data.

20. (Currently Amended) The system of claim 19, ~~wherein the temporarily stored audio data includes scale factors of sub-bands of audio frames of an audio file, and wherein the detection means a peak level or an average level of the sub-bands, which are used to determine the peak level or the average level of the audio file, is obtained by accumulatively adding adds~~ only sampled ones of the scale factors ~~to obtain a peak level or an average value of the sub-bands that are used to determine the peak level or the average level of the audio file.~~

21. (Currently Amended) The system of claim 16, wherein ~~the detector said detection means~~ is adapted to detect the output level of the temporarily stored audio data by sampling a reduced subset of the temporarily stored audio data.

22. (Currently Amended) The system of claim 16, wherein ~~the controller said control means~~ is adapted to increase the gain of ~~the said~~ audio amplifier means when ~~the said~~ detected output level is lower than a predetermined reference level and reduce the gain when ~~the said~~ detected output level is higher than ~~the said~~ reference level to output ~~the said~~ audio data to be reproduced, at ~~the said~~ reference level.

23. (Currently Amended) The system of claim 16, wherein ~~the controller said control means~~ is adapted to, on an audio file basis, control ~~the said storage device means~~ to temporarily store ~~the said~~ audio data to be reproduced, control ~~the detector said detection means~~ to detect

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the output level of the temporarily stored audio data, and adjust the gain of the said audio amplifier ~~means~~ responsive to detected output level and a selected output level of the audio file requested to be played.

24-29 (Canceled)